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15th April 2004
Ne/bec (20040148)
Q02068DE10

Fixed ball joint with rotated track cross-sections

Abstract

A constant velocity joint in the form of a fixed joint with the following characteristics:
an outer joint part 12 which comprises a longitudinal axis as well as an attaching end and an aperture end positioned axially opposite one another, and which is provided with outer ball tracks 22_1, 22_2;
an inner joint part 13 which comprises a longitudinal axis L13 and attaching means for a shaft pointing towards the aperture end of the outer joint part 12 and which is provided with inner ball tracks 23_1, 23_2; the outer ball tracks and the inner ball tracks form pairs of tracks 21_1, 23_1; 22_2, 23_2;
the pairs of tracks each accommodate a torque transmitting ball 14_1, 14_2;
each two adjoining pairs of tracks comprise outer ball tracks 22_1, 22_2 whose centre lines are positioned in planes E1, E2 which extend substantially parallel relative to one another, as well as inner ball tracks 23_1, 23_2 whose centre lines are positioned in planes E1', E2' which extend substantially parallel relative to one another;
an annular ball cage 16 is positioned between the outer joint part 12 and the inner joint part 13 and comprises circumferentially distributed cage windows 17 which each accommodate the torque transmitting balls 14_1, 14_2 of two of said adjoining pairs of tracks 22_1, 23_1; 22_2, 23_2;
in an aligned joint, the centres K_1, K_2 of the balls 14_1, 14_2

are held by the ball cage 16 in the joint centre plane and when the joint is articulated, they are guided onto the angle-bisecting plane between the longitudinal axes;
the track cross-sections of the outer ball tracks 22_1, 22_2 and of the inner ball tracks 23_1, 23_2 of each pair of tracks are symmetrical relative to the axes of symmetry ES_1, ES_2 which, together with the planes E1, E2, E1', E2', form identically sized angles opening in opposite directions, and each comprise a common point.

Figure 1a